

### **P1.1 Scientific Inquiry**

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**P1.1A**

Generate new questions that can be investigated in the laboratory or field.

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**P1.1B**

Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions.

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**P1.1C**

Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity—length, volume, weight, time interval, temperature—with the appropriate level of precision).

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**P1.1D**

Identify patterns in data and relate them to theoretical models.

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**P1.1E**

Describe a reason for a given conclusion using evidence from an investigation.

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**P1.1f**

Predict what would happen if the variables, methods, or timing of an investigation were changed.

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**P1.1g**

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**P1.1h**

Design and conduct a systematic scientific investigation that tests a hypothesis. Draw conclusions from data presented in charts or tables.

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**P1.1i**

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## **P1.2 Scientific Reflection and Social Implications**

The integrity of the scientific process depends on scientists and citizens understanding and respecting the “Nature of Science.” Openness to new ideas, skepticism, and honesty are attributes required for good scientific practice. Scientists must use logical reasoning during investigation design, analysis, conclusion, and communication. Science can produce critical insights on societal problems from a personal and local scale to a global scale. Science both aids in the development of technology and provides tools for assessing the costs, risks, and benefits of technological systems. Scientific conclusions and arguments play a role in personal choice and public policy decisions. New technology and scientific discoveries have had a major influence in shaping human history. Science and technology continue to offer diverse and significant career opportunities.

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**P1.2A**

Critique whether or not specific questions can be answered through scientific investigations.

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**P1.2B**

Identify and critique arguments about personal or societal issues based on scientific evidence.

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**P1.2C**

Develop an understanding of a scientific concept by accessing information from multiple sources. Evaluate the scientific accuracy and significance of the information.

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**P1.2D**

Evaluate scientific explanations in a peer review process or discussion format.

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**P1.2E**

Evaluate the future career and occupational prospects of science fields.

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**P1.2f**

Critique solutions to problems, given criteria and scientific constraints.

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**P1.2g**

Identify scientific tradeoffs in design decisions and choose among alternative solutions.

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**P1.2h**

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**P1.2i**

Explain the progression of ideas and explanations that lead to science theories that are part of the current scientific consensus or core knowledge.

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**P1.2j**

Apply science principles or scientific data to anticipate effects of technological design decisions.

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**P1.2k**

Analyze how science and society interact from a historical, political, economic, or social perspective.

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